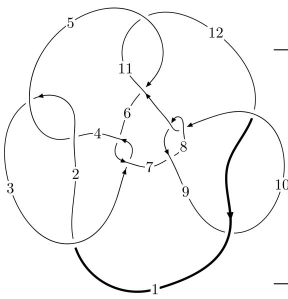
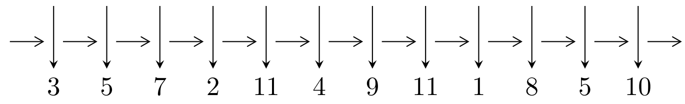
$12n_{0133}$ ($K12n_{0133}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

$9{,}11 \xrightarrow[c_8]{} 8 \xrightarrow[c_7]{} 4{,}7 \xrightarrow[c_3]{} 3 \xrightarrow[c_6]{} 6 \xrightarrow[c_5]{} 5 \xrightarrow[c_{11}]{} 12 \xrightarrow[c_{10}]{} 10 \xrightarrow[c_{12}]{} 1 \xrightarrow[c_1]{} 2 \twoheadrightarrow c_2, c_4, c_9$

Ideals for irreducible components[2] of $X_{\mathbf{par}}$

$$
\begin{aligned}
I_1^u = \langle & 2u^{13} + 5u^{12} - 2u^{11} - 16u^{10} - 10u^9 + 16u^8 + 28u^7 + 10u^6 - 19u^5 - 25u^4 - 7u^3 + 6u^2 + 2b + 5u, \\
& - u^{13} - 4u^{12} - 3u^{11} + 8u^{10} + 14u^9 - 18u^7 - 21u^6 - 5u^5 + 16u^4 + 17u^3 + 4u^2 + 2a - 4u - 5, \\
& u^{14} + 3u^{13} - 9u^{11} - 8u^{10} + 8u^9 + 18u^8 + 9u^7 - 10u^6 - 18u^5 - 6u^4 + 6u^3 + 6u^2 + 2u - 1\rangle \\
I_2^u = \langle & -1.17690 \times 10^{65} u^{57} - 3.97295 \times 10^{65} u^{56} + \cdots + 3.56133 \times 10^{64} b - 4.96718 \times 10^{63}, \\
& - 6.29210 \times 10^{64} u^{57} - 8.59795 \times 10^{64} u^{56} + \cdots + 7.12266 \times 10^{64} a - 4.18226 \times 10^{65},\ u^{58} + 4u^{57} + \cdots - 5u - \\
I_3^u = \langle & u^2 + b + u - 1,\ a + u,\ u^3 + u^2 - 1\rangle \\
I_4^u = \langle & 4u^2 a + 6au + b + 4a + 1,\ -2u^2 a + a^2 - au - 2u^2 + 2a - u + 2,\ u^3 + u^2 - 1\rangle \\
I_5^u = \langle & b - u - 2,\ a + 2u + 3,\ u^2 + u - 1\rangle \\
I_6^u = \langle & b - 2a + 2,\ a^2 - a - 1,\ u - 1\rangle
\end{aligned}
$$

* 6 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 85 representations.

[1] The image of knot diagram is generated by the software "**Draw programme**" developed by Andrew Bartholomew(`http://www.layer8.co.uk/maths/draw/index.htm#Running-draw`), where we modified some parts for our purpose(`https://github.com/CATsTAILs/LinksPainter`).

[2] All coefficients of polynomials are rational numbers. But the coefficients are sometimes approximated in decimal forms when there is not enough margin.

I. $I_1^u = \langle 2u^{13}+5u^{12}+\cdots+2b+5u,\ -u^{13}-4u^{12}+\cdots+2a-5,\ u^{14}+3u^{13}+\cdots+2u-1\rangle$

(i) Arc colorings

$$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} \frac{1}{2}u^{13} + 2u^{12} + \cdots + 2u + \frac{5}{2} \\ -u^{13} - \frac{5}{2}u^{12} + \cdots - 3u^2 - \frac{5}{2}u \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -u^2 + 1 \\ -u^2 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} \frac{1}{2}u^{13} + \frac{3}{2}u^{12} + \cdots + \frac{5}{2}u + 2 \\ -\frac{1}{2}u^{13} - 2u^{12} + \cdots - u - \frac{1}{2} \end{pmatrix}$$

$$a_6 = \begin{pmatrix} \frac{1}{2}u^{13} + \frac{3}{2}u^{12} + \cdots + \frac{3}{2}u + 2 \\ -\frac{1}{2}u^{12} - \frac{3}{2}u^{11} + \cdots - \frac{1}{2}u - \frac{1}{2} \end{pmatrix}$$

$$a_5 = \begin{pmatrix} \frac{1}{2}u^{13} + \frac{3}{2}u^{12} + \cdots + \frac{3}{2}u + 2 \\ -u^{12} - \frac{5}{2}u^{11} + \cdots - u - \frac{1}{2} \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -u^{11} - u^{10} + 3u^9 + 4u^8 - 3u^7 - 6u^6 - 2u^5 + 3u^4 + 5u^3 + u^2 - 2u - 1 \\ u^{13} + \frac{3}{2}u^{12} + \cdots + 3u^2 + \frac{3}{2}u \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} u \\ -u^3 + u \end{pmatrix}$$

$$a_1 = \begin{pmatrix} \frac{1}{2}u^{13} + u^{12} + \cdots - u - \frac{3}{2} \\ \frac{1}{2}u^{13} + u^{12} + \cdots + \frac{7}{2}u^2 + u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -\frac{1}{2}u^{13} - \frac{3}{2}u^{12} + \cdots - \frac{3}{2}u - \frac{3}{2} \\ -\frac{1}{2}u^{13} - \frac{1}{2}u^{12} + \cdots + \frac{1}{2}u + \frac{1}{2} \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes

$= 3u^{13}+3u^{12}-15u^{11}-24u^{10}+14u^9+44u^8+18u^7-27u^6-52u^5-25u^4+14u^3+10u^2+3u-11$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_7	$u^{14} + 9u^{13} + \cdots + 16u + 1$
c_2, c_4, c_8 c_{10}	$u^{14} - 3u^{13} + \cdots - 2u - 1$
c_3, c_6, c_9 c_{12}	$u^{14} - u^{13} + \cdots - 4u - 1$
c_5, c_{11}	$u^{14} - 7u^{13} + \cdots - 24u + 8$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_7	$y^{14} - 5y^{13} + \cdots - 208y + 1$
c_2, c_4, c_8 c_{10}	$y^{14} - 9y^{13} + \cdots - 16y + 1$
c_3, c_6, c_9 c_{12}	$y^{14} + 3y^{13} + \cdots - 8y + 1$
c_5, c_{11}	$y^{14} - 7y^{13} + \cdots + 384y + 64$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.242991 + 0.933745I$ $a = -0.20291 + 1.67953I$ $b = -0.821533 + 0.270883I$	$1.33116 - 5.50874I$	$-7.69545 + 3.70076I$
$u = -0.242991 - 0.933745I$ $a = -0.20291 - 1.67953I$ $b = -0.821533 - 0.270883I$	$1.33116 + 5.50874I$	$-7.69545 - 3.70076I$
$u = 0.951606 + 0.107631I$ $a = -0.80680 + 1.21543I$ $b = 3.80232 + 0.74412I$	$-2.88995 - 0.46660I$	$-33.6526 - 15.6404I$
$u = 0.951606 - 0.107631I$ $a = -0.80680 - 1.21543I$ $b = 3.80232 - 0.74412I$	$-2.88995 + 0.46660I$	$-33.6526 + 15.6404I$
$u = -0.389011 + 0.665748I$ $a = 0.507976 + 0.255319I$ $b = 0.587054 + 0.784524I$	$3.75566 + 0.17244I$	$-4.31674 - 1.33622I$
$u = -0.389011 - 0.665748I$ $a = 0.507976 - 0.255319I$ $b = 0.587054 - 0.784524I$	$3.75566 - 0.17244I$	$-4.31674 + 1.33622I$
$u = -1.217360 + 0.433191I$ $a = -0.051195 + 0.233560I$ $b = 0.695133 + 0.745943I$	$-1.53918 + 8.57795I$	$-13.9694 - 8.6920I$
$u = -1.217360 - 0.433191I$ $a = -0.051195 - 0.233560I$ $b = 0.695133 - 0.745943I$	$-1.53918 - 8.57795I$	$-13.9694 + 8.6920I$
$u = 1.208510 + 0.461890I$ $a = 1.195780 - 0.437447I$ $b = 1.55260 - 0.60463I$	$-7.24910 - 2.92807I$	$-16.0849 + 1.6852I$
$u = 1.208510 - 0.461890I$ $a = 1.195780 + 0.437447I$ $b = 1.55260 + 0.60463I$	$-7.24910 + 2.92807I$	$-16.0849 - 1.6852I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.31782$ $a = \ \ 0.941660$ $b = \ \ 0.882448$	-10.4546	-24.6220
$u = -1.28364 + 0.61767I$ $a = -1.46437 - 0.09958I$ $b = -2.38982 - 1.44096I$	$-4.9818 + 17.0516I$	$-13.2441 - 9.4300I$
$u = -1.28364 - 0.61767I$ $a = -1.46437 + 0.09958I$ $b = -2.38982 + 1.44096I$	$-4.9818 - 17.0516I$	$-13.2441 + 9.4300I$
$u = \ \ 0.263596$ $a = \ \ 2.70137$ $b = -0.733954$	-0.942520	-9.45120

II.
$\boldsymbol{I_2^u = \langle -1.18\times10^{65}u^{57} - 3.97\times10^{65}u^{56} + \cdots + 3.56\times10^{64}b - 4.97\times10^{63},\ -6.29\times10^{64}u^{57} - 8.60\times10^{64}u^{56} + \cdots + 7.12\times10^{64}a - 4.18\times10^{65},\ u^{58} + 4u^{57} + \cdots - 5u + 1\rangle}$

(i) Arc colorings

$$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 0.883391u^{57} + 1.20713u^{56} + \cdots - 9.91542u + 5.87176 \\ 3.30467u^{57} + 11.1558u^{56} + \cdots - 6.41751u + 0.139475 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -u^2 + 1 \\ -u^2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 0.793575u^{57} + 0.365747u^{56} + \cdots - 3.89250u + 4.38523 \\ 1.32573u^{57} + 4.64753u^{56} + \cdots + 4.91950u - 1.75010 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1.70888u^{57} + 4.42480u^{56} + \cdots - 6.68595u + 4.41639 \\ 2.56867u^{57} + 8.73466u^{56} + \cdots - 12.4165u + 1.63075 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 1.70888u^{57} + 4.42480u^{56} + \cdots - 6.68595u + 4.41639 \\ 0.322307u^{57} + 1.39608u^{56} + \cdots + 1.34584u - 0.779945 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 1.31808u^{57} + 3.67421u^{56} + \cdots + 1.92169u - 2.00892 \\ 0.489553u^{57} + 1.26691u^{56} + \cdots - 0.411200u + 0.625023 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} u \\ -u^3 + u \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 2.12433u^{57} + 5.66107u^{56} + \cdots + 3.12772u - 2.10774 \\ -0.0988242u^{57} - 1.20154u^{56} + \cdots + 7.79161u - 0.711908 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -0.453494u^{57} - 0.227312u^{56} + \cdots + 6.41674u - 3.64552 \\ -2.66084u^{57} - 9.70894u^{56} + \cdots + 11.5745u - 1.08534 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 8.86204u^{57} + 41.6548u^{56} + \cdots + 50.2522u - 23.8526$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_7	$u^{58} + 32u^{57} + \cdots + 25u + 1$
c_2, c_4, c_8 c_{10}	$u^{58} - 4u^{57} + \cdots + 5u + 1$
c_3, c_6, c_9 c_{12}	$u^{58} - 4u^{57} + \cdots + 32u - 4$
c_5, c_{11}	$(u^{29} + 2u^{28} + \cdots - 28u - 8)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_7	$y^{58} - 8y^{57} + \cdots + 195y + 1$
c_2, c_4, c_8 c_{10}	$y^{58} - 32y^{57} + \cdots - 25y + 1$
c_3, c_6, c_9 c_{12}	$y^{58} + 18y^{57} + \cdots - 984y + 16$
c_5, c_{11}	$(y^{29} - 28y^{28} + \cdots + 2896y - 64)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.988988$ $a = -0.481132$ $b = -5.97136$	-2.67255	-211.680
$u = -0.852515 + 0.455377I$ $a = 0.096402 + 0.221595I$ $b = 1.14950 + 1.39220I$	$4.34822 + 5.30129I$	$-10.14110 - 5.91971I$
$u = -0.852515 - 0.455377I$ $a = 0.096402 - 0.221595I$ $b = 1.14950 - 1.39220I$	$4.34822 - 5.30129I$	$-10.14110 + 5.91971I$
$u = -0.875378 + 0.395680I$ $a = -1.17395 - 1.12502I$ $b = -0.55207 - 1.63441I$	$-1.15248 + 2.97907I$	$-9.53425 - 4.84429I$
$u = -0.875378 - 0.395680I$ $a = -1.17395 + 1.12502I$ $b = -0.55207 + 1.63441I$	$-1.15248 - 2.97907I$	$-9.53425 + 4.84429I$
$u = 0.382222 + 0.979860I$ $a = 0.37822 + 1.49048I$ $b = 0.968996 + 0.458325I$	$-4.05295 + 3.42058I$	$-12.00000 - 4.03802I$
$u = 0.382222 - 0.979860I$ $a = 0.37822 - 1.49048I$ $b = 0.968996 - 0.458325I$	$-4.05295 - 3.42058I$	$-12.00000 + 4.03802I$
$u = -1.06017$ $a = 1.48801$ $b = 1.19467$	-10.6310	-48.5360
$u = -0.216051 + 1.075610I$ $a = 0.49789 - 1.82352I$ $b = 0.930330 - 0.518578I$	$-1.66044 - 11.01250I$	$-12.00000 + 0.I$
$u = -0.216051 - 1.075610I$ $a = 0.49789 + 1.82352I$ $b = 0.930330 + 0.518578I$	$-1.66044 + 11.01250I$	$-12.00000 + 0.I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.994844 + 0.502352I$ $a = -0.026325 - 0.357537I$ $b = -1.077780 - 0.102508I$	$-0.488787 + 0.370462I$	0
$u = 0.994844 - 0.502352I$ $a = -0.026325 + 0.357537I$ $b = -1.077780 + 0.102508I$	$-0.488787 - 0.370462I$	0
$u = -0.108845 + 0.869895I$ $a = 0.31064 + 1.79296I$ $b = 0.569231 + 0.371365I$	$-3.19564 - 4.35308I$	$-12.04263 + 3.74313I$
$u = -0.108845 - 0.869895I$ $a = 0.31064 - 1.79296I$ $b = 0.569231 - 0.371365I$	$-3.19564 + 4.35308I$	$-12.04263 - 3.74313I$
$u = -1.006590 + 0.537430I$ $a = 0.312868 + 0.518025I$ $b = -0.632775 - 0.100970I$	$2.03816 + 4.43643I$	0
$u = -1.006590 - 0.537430I$ $a = 0.312868 - 0.518025I$ $b = -0.632775 + 0.100970I$	$2.03816 - 4.43643I$	0
$u = -0.873306 + 0.762690I$ $a = 2.26083 + 2.71765I$ $b = 0.21388 + 2.77675I$	$1.81502 + 2.87998I$	0
$u = -0.873306 - 0.762690I$ $a = 2.26083 - 2.71765I$ $b = 0.21388 - 2.77675I$	$1.81502 - 2.87998I$	0
$u = 0.836851 + 0.036106I$ $a = 0.0838767 - 0.0224097I$ $b = 0.00910 - 4.38592I$	$1.81502 - 2.87998I$	$-58.6220 + 17.5185I$
$u = 0.836851 - 0.036106I$ $a = 0.0838767 + 0.0224097I$ $b = 0.00910 + 4.38592I$	$1.81502 + 2.87998I$	$-58.6220 - 17.5185I$

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.654785 + 0.491061I$ $a = 0.267178 + 0.146980I$ $b = -0.936070 - 0.955868I$	$4.90257 - 1.34329I$	$-7.80264 + 1.36225I$
$u = -0.654785 - 0.491061I$ $a = 0.267178 - 0.146980I$ $b = -0.936070 + 0.955868I$	$4.90257 + 1.34329I$	$-7.80264 - 1.36225I$
$u = -1.141310 + 0.406924I$ $a = -1.042680 - 0.445981I$ $b = -1.124050 - 0.134041I$	$-4.05295 + 3.42058I$	0
$u = -1.141310 - 0.406924I$ $a = -1.042680 + 0.445981I$ $b = -1.124050 + 0.134041I$	$-4.05295 - 3.42058I$	0
$u = -0.787150 + 0.924733I$ $a = 1.205180 - 0.532327I$ $b = 1.38107 + 0.43654I$	$4.90257 + 1.34329I$	0
$u = -0.787150 - 0.924733I$ $a = 1.205180 + 0.532327I$ $b = 1.38107 - 0.43654I$	$4.90257 - 1.34329I$	0
$u = 0.000304 + 0.780908I$ $a = -0.24339 - 2.24468I$ $b = 0.267868 - 0.277636I$	$-3.74876 - 1.54341I$	$-12.07483 + 3.03548I$
$u = 0.000304 - 0.780908I$ $a = -0.24339 + 2.24468I$ $b = 0.267868 + 0.277636I$	$-3.74876 + 1.54341I$	$-12.07483 - 3.03548I$
$u = 1.120680 + 0.529353I$ $a = 1.175230 - 0.118199I$ $b = 1.86181 - 1.77127I$	$-3.19564 - 4.35308I$	0
$u = 1.120680 - 0.529353I$ $a = 1.175230 + 0.118199I$ $b = 1.86181 + 1.77127I$	$-3.19564 + 4.35308I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.665448+0.320577I$ $a=-1.75785-0.27970I$ $b=-0.427413-0.048282I$	$-0.488787+0.370462I$	$-8.36692-2.50640I$
$u=-0.665448-0.320577I$ $a=-1.75785+0.27970I$ $b=-0.427413+0.048282I$	$-0.488787-0.370462I$	$-8.36692+2.50640I$
$u=-1.209970+0.458074I$ $a=-1.109810-0.614505I$ $b=-2.00916-2.00839I$	$-7.27243+6.00653I$	0
$u=-1.209970-0.458074I$ $a=-1.109810+0.614505I$ $b=-2.00916+2.00839I$	$-7.27243-6.00653I$	0
$u=1.264110+0.277934I$ $a=-0.094671-0.217784I$ $b=0.589009+0.036358I$	$-1.15248-2.97907I$	0
$u=1.264110-0.277934I$ $a=-0.094671+0.217784I$ $b=0.589009-0.036358I$	$-1.15248+2.97907I$	0
$u=1.278760+0.279605I$ $a=-0.874635+0.506037I$ $b=-1.179270+0.382768I$	$-3.74876+1.54341I$	0
$u=1.278760-0.279605I$ $a=-0.874635-0.506037I$ $b=-1.179270-0.382768I$	$-3.74876-1.54341I$	0
$u=0.689587$ $a=6.16946$ $b=-5.31315$	-2.67255	-211.680
$u=1.251940+0.396137I$ $a=-1.204600+0.452476I$ $b=-2.28308+2.02996I$	-7.39364	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.251940 - 0.396137I$ $a = -1.204600 - 0.452476I$ $b = -2.28308 - 2.02996I$	-7.39364	0
$u = 0.027420 + 0.672723I$ $a = 0.367381 + 0.017368I$ $b = -0.180737 - 0.719838I$	$2.03816 - 4.43643I$	$-7.12586 + 5.70665I$
$u = 0.027420 - 0.672723I$ $a = 0.367381 - 0.017368I$ $b = -0.180737 + 0.719838I$	$2.03816 + 4.43643I$	$-7.12586 - 5.70665I$
$u = -1.227590 + 0.512752I$ $a = 1.029830 + 0.433526I$ $b = 1.235900 + 0.213650I$	$-6.56035 + 9.36152I$	0
$u = -1.227590 - 0.512752I$ $a = 1.029830 - 0.433526I$ $b = 1.235900 - 0.213650I$	$-6.56035 - 9.36152I$	0
$u = -0.984255 + 0.909262I$ $a = -1.077810 + 0.708898I$ $b = -1.52408 - 0.24363I$	$4.34822 + 5.30129I$	0
$u = -0.984255 - 0.909262I$ $a = -1.077810 - 0.708898I$ $b = -1.52408 + 0.24363I$	$4.34822 - 5.30129I$	0
$u = -1.220950 + 0.580073I$ $a = 1.236460 + 0.202005I$ $b = 2.15316 + 1.56889I$	$-1.66044 + 11.01250I$	0
$u = -1.220950 - 0.580073I$ $a = 1.236460 - 0.202005I$ $b = 2.15316 - 1.56889I$	$-1.66044 - 11.01250I$	0
$u = 1.196500 + 0.654445I$ $a = -1.393060 + 0.026552I$ $b = -2.02586 + 1.44130I$	$-6.56035 - 9.36152I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.196500 - 0.654445I$ $a = -1.393060 - 0.026552I$ $b = -2.02586 - 1.44130I$	$-6.56035 + 9.36152I$	0
$u = 1.44823 + 0.32172I$ $a = 0.885882 - 0.795017I$ $b = 0.993193 - 0.775693I$	$-7.27243 + 6.00653I$	0
$u = 1.44823 - 0.32172I$ $a = 0.885882 + 0.795017I$ $b = 0.993193 + 0.775693I$	$-7.27243 - 6.00653I$	0
$u = -1.57371$ $a = 0.372440$ $b = 0.379153$	-10.6310	0
$u = 0.242019 + 0.246574I$ $a = 1.39952 - 1.87926I$ $b = -0.768573 - 0.066926I$	-0.942618	$-9.31087 + 0.I$
$u = 0.242019 - 0.246574I$ $a = 1.39952 + 1.87926I$ $b = -0.768573 + 0.066926I$	-0.942618	$-9.31087 + 0.I$
$u = 0.257910 + 0.127141I$ $a = 2.21702 - 1.31285I$ $b = -0.746774 - 0.028572I$	-0.942376	$-9.38299 + 0.I$
$u = 0.257910 - 0.127141I$ $a = 2.21702 + 1.31285I$ $b = -0.746774 + 0.028572I$	-0.942376	$-9.38299 + 0.I$

III. $I_3^u = \langle u^2 + b + u - 1,\ a + u,\ u^3 + u^2 - 1 \rangle$

(i) Arc colorings

$$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -u \\ -u^2 - u + 1 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -u^2 + 1 \\ -u^2 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 0 \\ -u \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 0 \\ -u \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} u \\ u^2 + u - 1 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} u^2 - 1 \\ u^2 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -1 \\ u^2 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -8u - 12$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_3, c_7 c_9	$u^3 - u^2 + 2u - 1$
c_2, c_8	$u^3 + u^2 - 1$
c_4, c_{10}	$u^3 - u^2 + 1$
c_5, c_{11}	u^3
c_6, c_{12}	$u^3 + u^2 + 2u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_3, c_6 c_7, c_9, c_{12}	$y^3 + 3y^2 + 2y - 1$
c_2, c_4, c_8 c_{10}	$y^3 - y^2 + 2y - 1$
c_5, c_{11}	y^3

(vi) Complex Volumes and Cusp Shapes

Solutions to I^u_3	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.877439 + 0.744862I$ $a = 0.877439 - 0.744862I$ $b = 1.66236 + 0.56228I$	$6.04826 + 5.65624I$	$-4.98049 - 5.95889I$
$u = -0.877439 - 0.744862I$ $a = 0.877439 + 0.744862I$ $b = 1.66236 - 0.56228I$	$6.04826 - 5.65624I$	$-4.98049 + 5.95889I$
$u = 0.754878$ $a = -0.754878$ $b = -0.324718$	-2.22691	-18.0390

IV.

$$\boldsymbol{I_4^u = \langle 4u^2a+6au+b+4a+1,\ -2u^2a+a^2-au-2u^2+2a-u+2,\ u^3+u^2-1\rangle}$$

(i) Arc colorings

$$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} a \\ -4u^2a-6au-4a-1 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -u^2+1 \\ -u^2 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -au+u^2-u \\ -3u^2a-5au-3a-u \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 0 \\ -u^2a-2au+2u^2-2a+2u+1 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 0 \\ -u^2a-2au+2u^2-2a+2u+1 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} u \\ u^2+u-1 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} u^2-1 \\ u^2 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -au+u^2-u \\ -u^2a-2au+2u^2-a+u+2 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -16u^2a-21au-21a+11u-1$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_3, c_7 c_9	$(u^3 - u^2 + 2u - 1)^2$
c_2, c_8	$(u^3 + u^2 - 1)^2$
c_4, c_{10}	$(u^3 - u^2 + 1)^2$
c_5, c_{11}	u^6
c_6, c_{12}	$(u^3 + u^2 + 2u + 1)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_3, c_6 c_7, c_9, c_{12}	$(y^3 + 3y^2 + 2y - 1)^2$
c_2, c_4, c_8 c_{10}	$(y^3 - y^2 + 2y - 1)^2$
c_5, c_{11}	y^6

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.877439 + 0.744862I$ $a = -1.069840 + 0.424452I$ $b = -1.75488 - 0.64082I$	6.04826	$-6.45445 + 0.I$
$u = -0.877439 + 0.744862I$ $a = -1.37744 - 2.29387I$ $b = 0.18504 - 1.97346I$	$1.91067 + 2.82812I$	$9.7272 + 14.7292I$
$u = -0.877439 - 0.744862I$ $a = -1.069840 - 0.424452I$ $b = -1.75488 + 0.64082I$	6.04826	$-6.45445 + 0.I$
$u = -0.877439 - 0.744862I$ $a = -1.37744 + 2.29387I$ $b = 0.18504 + 1.97346I$	$1.91067 - 2.82812I$	$9.7272 - 14.7292I$
$u = 0.754878$ $a = -0.052721 + 0.320410I$ $b = -0.43016 - 3.46319I$	$1.91067 - 2.82812I$	$9.7272 - 14.7292I$
$u = 0.754878$ $a = -0.052721 - 0.320410I$ $b = -0.43016 + 3.46319I$	$1.91067 + 2.82812I$	$9.7272 + 14.7292I$

V. $I_5^u = \langle b - u - 2,\ a + 2u + 3,\ u^2 + u - 1 \rangle$

(i) Arc colorings

$$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 1 \\ u - 1 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -2u - 3 \\ u + 2 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} u \\ u - 1 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -2u - 3 \\ u + 2 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} u \\ u - 1 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} u \\ -u \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -2u + 1 \\ 3u - 1 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} u \\ -u + 1 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -u \\ u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -3u - 3 \\ 2u + 2 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 29$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2	$(u-1)^2$
c_3, c_6	u^2
c_4	$(u+1)^2$
c_5, c_7	u^2-3u+1
c_8, c_9	u^2+u-1
c_{10}, c_{12}	u^2-u-1
c_{11}	u^2+3u+1

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4	$(y-1)^2$
c_3, c_6	y^2
c_5, c_7, c_{11}	$y^2 - 7y + 1$
c_8, c_9, c_{10} c_{12}	$y^2 - 3y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_5^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = \ \ 0.618034$ $a = -4.23607$ $b = \ \ 2.61803$	-2.63189	29.0000
$u = -1.61803$ $a = \ \ 0.236068$ $b = \ \ 0.381966$	-10.5276	29.0000

VI. $I_6^u = \langle b - 2a + 2,\ a^2 - a - 1,\ u - 1 \rangle$

(i) Arc colorings

$$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 1 \\ -1 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} a \\ 2a - 2 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} a \\ a - 2 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -a - 1 \\ -3 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -a - 1 \\ a - 2 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -3a - 2 \\ 0 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -3a - 2 \\ 0 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -a - 1 \\ -1 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 29$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_{11}	$u^2 - 3u + 1$
c_2, c_3	$u^2 + u - 1$
c_4, c_6	$u^2 - u - 1$
c_5	$u^2 + 3u + 1$
c_7, c_8	$(u-1)^2$
c_9, c_{12}	u^2
c_{10}	$(u+1)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_5, c_{11}	$y^2 - 7y + 1$
c_2, c_3, c_4 c_6	$y^2 - 3y + 1$
c_7, c_8, c_{10}	$(y-1)^2$
c_9, c_{12}	y^2

(vi) Complex Volumes and Cusp Shapes

Solutions to I_6^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.00000$ $a = -0.618034$ $b = -3.23607$	-2.63189	29.0000
$u = 1.00000$ $a = 1.61803$ $b = 1.23607$	-10.5276	29.0000

VII. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_7	$((u-1)^2)(u^2-3u+1)(u^3-u^2+2u-1)^3(u^{14}+9u^{13}+\cdots+16u+1)$ $\cdot\,(u^{58}+32u^{57}+\cdots+25u+1)$
c_2, c_8	$((u-1)^2)(u^2+u-1)(u^3+u^2-1)^3(u^{14}-3u^{13}+\cdots-2u-1)$ $\cdot\,(u^{58}-4u^{57}+\cdots+5u+1)$
c_3, c_9	$u^2(u^2+u-1)(u^3-u^2+2u-1)^3(u^{14}-u^{13}+\cdots-4u-1)$ $\cdot\,(u^{58}-4u^{57}+\cdots+32u-4)$
c_4, c_{10}	$((u+1)^2)(u^2-u-1)(u^3-u^2+1)^3(u^{14}-3u^{13}+\cdots-2u-1)$ $\cdot\,(u^{58}-4u^{57}+\cdots+5u+1)$
c_5, c_{11}	$u^9(u^2-3u+1)(u^2+3u+1)(u^{14}-7u^{13}+\cdots-24u+8)$ $\cdot\,(u^{29}+2u^{28}+\cdots-28u-8)^2$
c_6, c_{12}	$u^2(u^2-u-1)(u^3+u^2+2u+1)^3(u^{14}-u^{13}+\cdots-4u-1)$ $\cdot\,(u^{58}-4u^{57}+\cdots+32u-4)$

VIII. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_7	$((y-1)^2)(y^2-7y+1)(y^3+3y^2+2y-1)^3(y^{14}-5y^{13}+\cdots-208y+1)$ $\cdot(y^{58}-8y^{57}+\cdots+195y+1)$
c_2, c_4, c_8 c_{10}	$((y-1)^2)(y^2-3y+1)(y^3-y^2+2y-1)^3(y^{14}-9y^{13}+\cdots-16y+1)$ $\cdot(y^{58}-32y^{57}+\cdots-25y+1)$
c_3, c_6, c_9 c_{12}	$y^2(y^2-3y+1)(y^3+3y^2+2y-1)^3(y^{14}+3y^{13}+\cdots-8y+1)$ $\cdot(y^{58}+18y^{57}+\cdots-984y+16)$
c_5, c_{11}	$y^9(y^2-7y+1)^2(y^{14}-7y^{13}+\cdots+384y+64)$ $\cdot(y^{29}-28y^{28}+\cdots+2896y-64)^2$